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2. FACILITY DESCRIPTION

The following sections describe those facilities at INTEC that are categorized as Hazard Category 3 or higher according to the methods described in DOE Standard DOE-STD-1027-92. Those facilities that have inventories less than the Hazard Category 3 thresholds are not described in this chapter. These facilities either have safety analyses presented in the PSD or will have new safety analyses performed as deemed necessary on a case-by-case basis with DOE Idaho Operations Office (DOE-ID) acceptance. In the sections below, two levels of facility description detail are provided. First, more detailed descriptions are presented in this BIO for those INTEC facilities that will remain in operation during the upgrade of the PSDs to 10 CFR 830-compliant, facility-specific SARs. Second, those facilities that are or will be inactive are described in sufficient detail to convey the current facility condition. Detailed discussions are presented in the existing PSD and are referenced in the appropriate sections below.

2.1 Fuel Receipt and Storage

Each of the following sections briefly describes the fuel receipt and fuel storage facilities at INTEC.

2.1.1 Underwater Fuel Receiving and Storage Facility (CPP-603)

The Underwater Fuel Receiving and Storage Facility (CPP-603), designated the Fuel Storage Basins (FSB), was designed to receive, handle, store, and transfer spent nuclear fuel. The radioactive fuel was stored under water to provide shielding and to remove decay heat. All inventoried fuel has been removed from the facility. Preparations are underway for turning the facility over to the D&D organization.

The CPP-603 FSB building structure consists of a reinforced concrete foundation, with a superstructure of carbon steel supporting corrugated asbestos siding walls and a roof. The building has no ventilation system. Except for a sludge storage tank located in an underground vault east of CPP-603 and a hot waste tank located in a similar underground vault, all related equipment for fuel handling and water treatment is located in the CPP-603 building. The Irradiated Fuel Storage Facility (IFSF) for dry storage of nuclear fuel is attached to the CPP-603 building at the southwest corner. The crane used to handle fuel transport casks can serve both the FSB and the IFSF. The IFSF is further discussed in Section 2.1.4.

The FSB consists of three fuel storage basins (north, middle, and south), a north transfer station, and a south transfer station, all of which are connected by a transfer canal. Separate crane bays parallel the north and south transfer stations.

The north and middle basins are covered by floor grating, each measuring 18.2 m (60 ft) long, 12.2 m (40 ft) wide, and 6.4 m (21 ft) deep. Aluminum sandwiched lead plate is installed over the floor grating to provide worker isolation from scum accumulation at the water line and radiation shielding from radionuclides in the basin water.

The south basin is an open pool, 26.8 m (88 ft) long, 13.7 m (45 ft) wide, and 6.4 m (21 ft) deep, equipped with fuel storage racks. The south basin is currently empty.

A Fuel Element Cutting Facility, which is a hot cell located adjacent to the south basin, is currently used to store two Peach Bottom fuel elements. This facility is no longer used to cut fuel.

Instrumentation is provided to detect loss of basin water, high radiation fields, airborne radioactive contamination, and personnel contamination. In addition, the basin water is sampled and analyzed for radionuclide concentrations for compliance with water chemistry specifications and other hazardous materials. Detailed descriptions of this facility are contained in PSD Section 4.6.

2.1.2 Underground Fuel Storage Facility (CPP-749)

The Underground Fuel Storage Facility (USF, CPP-749) consists of underground vaults for the storage of irradiated and unirradiated nuclear fuel elements and components. The vertical underground storage vaults are designed to keep the fuel storage units dry, provide nuclear isolation between vaults, and provide a heat sink to dissipate the fission product decay heat.

There are two distinct vault types at CPP-749. The original, first-generation vaults contain Peach Bottom fuel elements and Fermi blanket assemblies. The Peach Bottom elements are canned in aluminum cans, with 18 cans contained in an aluminum basket. This basket is the storage unit contained in one vault. Fermi blanket assemblies are stored in long stainless-steel canisters, one canister per vault. Each first-generation vault is approximately 6.10 m (20 ft) deep and consists of a 0.76 m (30 in.) outer diameter (OD) cylindrical steel liner with a grout plug bottom and a welded-on cover. Peach Bottom fuels have a 1.22-m- (4-ft)-thick concrete shield plug placed in the top part of each vault under the cover. Fermi fuels have a 0.61-m- (2-ft)-thick concrete shield plug placed in the top part of each vault under the cover. Ports are provided at the top of the vault for sampling the vault atmosphere.

The newer, second-generation vaults consist of two different sizes for storing unirradiated and irradiated fuels from the Light-Water Breeder Reactor (LWBR) and other fuels to be received in the future. The vaults for the unirradiated LWBR fuels are 0.30 m (12 in.) OD and approximately 7.32 m (24 ft) deep. Each vault contains two fuel canisters that are stacked vertically. The vaults for the irradiated LWBR fuel and other fuels have a larger OD [approximately 0.76 m (30 in.)] with a depth of about 5.49 m (18 ft). Both sizes of the second-generation vaults have complete metallic casings with a welded bottom and a welded enlargement ring between the storage cylinder and a 1.12-m- (3-ft, 8-in.-) thick concrete shield plug at the top of the vault. These vaults are covered with a top plate that is bolted down with a gasket on the vault top. There are also valved small tube connections at the top of the vaults for sampling the vault atmosphere.

CPP-749 is enclosed by a chain link fence that is kept locked, except when access is required for operational purposes. Electrical power is provided for powering small power tools and radiation monitors. No other utilities are provided. Portable radiation monitors are brought in as needed for a particular job. No permanent radiation monitors are provided.

Vault atmospheres are sampled every two years to detect any condition that would indicate corrosion or compromised fuel containment. If any of these indicators are present, a corrective action plan is developed and appropriate steps are taken to correct or recover from the condition. Detailed descriptions of this facility can be found in PSD Section 4.7.

2.1.3 Unirradiated Fuel Storage Facility (CPP-651)

The Unirradiated Fuel Storage Facility (UFSF, CPP-651) was constructed for the safe and secure storage of a variety of unirradiated fissile materials. The UFSF consists of an outer reinforced concrete structure, two inner vaults, and rows of small storage wells in the annulus where fissile material containers are stored.

Much of the fissile material storage in the UFSF is in approved shipping or storage packages such as drums. These packages are certified by the DOE, the Department of Transportation (DOT), the Nuclear Regulatory Commission (NRC), or the International Atomic Energy Agency (IAEA) for shipping fissile materials, or are drums that have been designated for storage purposes only within INTEC. Any material that can be shipped in one of these shipping packages can be stored in the UFSF, by assignment of a transport index (TI) for criticality safety. Materials may also be stored in the approved storage packages using the TI to ensure criticality safety.

Other fissile materials are stored in racks designed for the specific fuel type and configuration. Storage racks are provided for Los Alamos National Laboratory (LANL) graphite fuel fabrication leftovers. Cabinets are provided for storage of zirconium clad fluorinel fuel pieces.

A storage cabinet with compartments formed from cadmium sheet is used to store uranium trioxide in small sample bottles. Uranium trioxide in large containers is stored either in storage packages or in storage racks in the storage wells in the annulus between the outer building and the vaults. The storage racks, cabinets, and wells are designed to provide criticality safety under all credible degrees of moderation. Administrative controls (TSs) and physical restraints are used in combination to ensure criticality safety for fuel handling and storage operations.

A criticality alarm system (CAS) provides detection and alarm functions in the event of a criticality accident. The Halon fire suppression system in the north and south vaults, is currently active, the dry-pipe sprinkler system is inactive. No utility water is available in the building. Opening of any containers of granular or powdered fissile materials is prohibited in the UFSF, and no processing is performed other than routine handling and storage. Because of the very low probability of contamination release, an unfiltered ventilation system is provided.

Operations in the UFSF are hands-on activities, and reliance is placed on administrative controls (TSs) to ensure criticality safety during fissile material handling. Operators must be qualified and are under continuous supervision by the facility nuclear material custodian, alternate custodian, or supervisor during any activity in the UFSF. Detailed descriptions of the UFSF can be found in PSD Section 4.8.

2.1.4 Irradiated Fuel Storage Facility (CPP-603)

The CPP-603 fuel storage facilities include wet storage in the CPP-603 Fuel Storage Basins (see Section 2.1.1) and dry storage in the IFSF. The IFSF (formerly called the Graphite Storage Facility) was constructed in 1974, as an extension to the CPP-603 building. The IFSF consists of the cask receiving area, permanent containment structure, the fuel handling cave, the fuel storage area, the control and instrument room, and the crane maintenance area.

Fuels are received at the IFSF in approved shipping casks transported by truck. In the cask receiving area, the casks are removed from the transport vehicle and placed into a cask transfer car located in the permanent containment structure. The permanent containment structure provides containment of possible contamination as the cask transfer car moves the cask into the fuel handling cave. In the fuel handling cave, the fuel is removed from the cask, placed into a storage canister, and dewatered in the Fuel Canning Station (FCS), if required. A shuttle bin is used to move the storage canister into or out of the fuel storage area.

Many of the fuels stored in the IFSF are graphite matrix-type fuel elements. These fuels, including Peach Bottom, Fort St. Vrain, and Rover, are stored in a dry environment, to minimize the potential for generating flammable gasses. A reaction generating flammable gases occurs if the graphite matrix is damaged sufficiently to expose the uranium and thorium carbide fuel to water. Other fuels, including fuels to be dewatered in the FCS, are stored in the IFSF because they are unsuitable for long-term underwater storage.

Fuel is stored in canisters supported by a rack in the fuel storage area. Loadings in the canisters are administratively controlled or physically limited to provide criticality safety under normal and postulated accident conditions. The storage rack provides canister spacing for criticality control. The rack has been shown to be capable of maintaining the required spacing during and following a design basis earthquake, although some rack damage may occur. Exclusion of water from the canister interiors is required for criticality safety of some fuels. This is accomplished by defense in depth protection, such as exclusion of water from the fuel storage area by design, canister integrity, and drain lines that are required to be locked open at all times when fuel is in storage. Criticality safety for canister fuel handling operations and for temporary storage in the fuel handling cave is ensured by design, storage well spacing, moderator administrative limits (TSs), fuel handling unit configuration, and allowable out-of-storage conditions. In the case of a criticality accident, a CAS detects the event and sounds an alarm.

The storage rack in the fuel storage area is enclosed on all sides and on the top, except for the openings for the canisters. Cooling air is directed into the rack and above the top surface of the rack to provide decay heat removal.

Filtered ventilation air is supplied; the air flows through the fuel storage area and fuel handling cave, and is exhausted by blowers through prefilters and high-efficiency particulate air (HEPA) filters. The crane maintenance area is also ventilated by these systems. The cask receiving area has no ventilation system. Flows are balanced and directed from areas of low contamination potential to areas having increased contamination potential.

The reinforced concrete walls of the IFSF provide shielding from the fuels stored and handled in the fuel storage area and fuel handling cave. Concrete thicknesses vary with position relative to work locations, accessibility, and fuel handling and storage activities. In general, concrete thicknesses vary from 1.2 m (4 ft) to 1.5 m (5 ft) thick. There are two shielded viewing windows in the fuel handling cave and one in the fuel storage area. Detailed descriptions of the IFSF can be found in PSD Section 4.12.

2.1.5 Fluorinel Dissolution Process and Fuel Storage (FAST) Facility (CPP-666)

The Fluorinel Dissolution Process and Fuel Storage (FAST) facility has two main areas. The first is the Fuel Storage Area (FSA), where fuel is stored underwater. The second area contains the Fluorinel Dissolution Process (FDP), where fuel was dissolved prior to the cancellation of fuel reprocessing. The FDP is discussed in this section and in Section 2.4.9.

The FSA portion of the FAST facility (CPP-666) contains seven main functional areas: (1) the truck receiving area, (2) the cask receiving and decontamination area (including two "decon" rooms), (3) fuel unloading pools and adjacent isolation pools, (4) the transfer channel, (5) the fuel storage pool area, (6) the fuel cutting pool area, and (7) the control room. There are also other support areas. Cask handling operations are conducted in the cask receiving and decontamination area located, to the south of the unloading pools. Access to the storage pools from the unloading pool is provided via the transfer channel. The transfer channel is located on the east side of the storage pool area and runs the entire length of the storage pool area. There are two unloading pools with adjacent isolation pools.

The storage pool area consists of six storage pools that contain fuel storage racks. These storage pools are identified as Pools 1 through 6. All the storage pools have the same footprint, with dimensions of 9.5 m (31 ft) in width (north-to-south direction) and 14.2 m (46.5 ft) in length (east-to-west direction). Pools 1 and 2 are 12.5-m- (41-ft)-deep storage pools. Pools 3, 4, 5, and 6 are 9.5-m- (31-ft)-deep (known as shallow) storage pools. Access into each storage pool from the transfer channel is provided through the pool gate opening.

The facility is equipped with three large-capacity cranes for cask, fuel, and equipment handling operations in the FSA. The fuel cutting pool, which is currently filled with water, and the crane in the fuel cutting pool area are not currently used. The cask handling crane has a 118,000 kg (130 ton) capacity. This crane is also equipped with a 22,700 kg (25 ton) auxiliary hoist. There are two fuel handling cranes, each with a 9,000 kg (10 ton) capacity.

As conceived in the project phase, the FSA design mission was to provide interim fuel storage for fuels destined to be processed in the FDP portion of the FAST facility. These fuels were primarily Navy fuels received from the Expended Core Facility located at another INEEL facility. For fuel processing, the FSA had sufficient surge capacity to store fuels, should a fuel processing campaign be delayed. Fuel was to be received in packages compatible with the dissolution process and suitable for direct charging into the three dissolvers in the FDP cell.

After facility operations commenced in April 1984, the scope of facility operations was expanded to include assembling of fuels into packages, storage of diverse fuel types and components not destined for processing in FDP, and storage of fuels in a stacked configuration in the rack ports. These diverse fuels included Experimental Breeder Reactor-II (from ANL-West), Fermi driver fuel, and miscellaneous aluminum fuels from university and research reactors. Given the cessation of fuel processing operations in 1992, along with the requirement to cease operation of the CPP-603 fuel storage basins (FSBs) in the near future, the mission of the FSA changed. The current mission includes long-term (>10 years) storage of fuels compatible with underwater environments, and interim storage of less stable materials destined for dry storage or other permanent disposition. Transfer of all fuels from the FSBs to the FSA was accomplished in 2000.

At the present time, the primary process operation conducted at this facility is fuel receipt, handling, and storage. Other support activities include cask handling operations, water recirculation and treatment processes, crane operations, and fuel inventory management. Reracking of the facility and relocation of available capacity within the fuel storage area is also planned. Fuel receiving involves the handling of fuel-loaded casks. A cask is placed in the unloading pool after any necessary decontamination and venting activities. Fuel is removed from the cask, assembled (or packaged) in the approved storage configuration, and transferred to an approved storage location.

Because of the facility mission change and the added capacity demands posed by CPP-603 fuel transfers, reracking activities are planned and authorized. The facility operations necessary to support these activities are numerous fuel moves, rack relocation, installation of new racks, and disposal of older racks. As of December 1996, Pool 1 has been reracked and fuel storage operations in the new racks have begun.

Detailed discussions of both areas are contained in PSD Section 5.6, Volumes I, II and III. Upgraded SAR-113 has been submitted to DOE-ID for review and approval. Approval of SAR-113 is pending.[1]

2.1.6 Fissile and Radioactive Material Transfers

Transfers of radioactive and fissile material using various casks, chargers, and containers are conducted within INTEC. Descriptions of the various types of casks, chargers, and containers used at INTEC are contained in PSD Section 4.5. Types of transfer casks, chargers, and containers include the High-Load charger, the Submarine Thermal Reactor (STR) charger, the Peach Bottom Cask, the CONT-YDC-900 container, INTEC sample carriers, Calcine Sample cask, NFS-100 cask, NRBK cask, NAC-LWT cask, GNS-16 cask, HFEF-6 cask, and the ATR cask. Transfer operations are expected to continue much as they have in the past.

2.2 High Level Waste Operations

2.2.1 New Waste Calcining Facility (CPP-659)

The DOE-approved safety basis for the NWCF (CPP-659) is contained in INTEC SAR-103.[2] This upgraded safety analysis meets the requirements of 10 CFR 830. TSRs derived from the upgraded safety analysis have also been approved by DOE. Therefore, the scope of this BIO no longer includes the NWCF.

2.2.2 Calcined Solids Storage Facilities

The Calcined Solids Storage Facilities 1 through 7 (CSSFs 1 through 7, CPP-741, CPP-742, CPP-746, CPP-760, CPP-765, CPP-791, and CPP-795, respectively) were sequentially built between 1965 and 1978, and placed in service as they were completed. The basic function of CSSFs 1 through 7 is the storage and confinement of the radioactive calcined solids produced from the calcination of liquid, high-level and sodium-bearing radioactive wastes in the Waste Calcining Facility (WCF) and the New Waste Calcining Facility (NWCF). The CSSFs provide multiple confinement barriers between the solid calcine and the environment.

CSSFs 1 through 7 vaults contain varying numbers of stainless steel calcined solids storage bins of varying storage capacities. CSSF 1 is filled to 95.7%, CSSF 2 is filled to 100%, and CSSF 3 is filled to 99.5% of their respective usable 100% design capacity. CSSFs 1, 2, and 3 store calcine produced by the WCF, which has undergone D&D. CSSFs 4 and 5 are filled to 100% and CSSF 6 is filled to 49% of the respective usable 100% design capacity. CSSFs 4, 5, and 6 store calcine produced by the NWCF. CSSF 6 remains ready to receive calcine and is maintained in an active storage configuration. CSSF 7 has not been approved for active service and has not received any calcined solids.

Each CSSF is divided into two main sections. The lower section houses the storage vault and the storage bins, and the upper section houses the balance of the support equipment. The support equipment includes the solids separation cyclone, distribution piping to the bins, instruments, and the off-gas equipment. Each storage vault contains a sump that is equipped with level monitoring instrumentation. The bins are provided with thermocouples to monitor the calcined solids and the bin wall temperatures.

The solid levels in each bin are determined by thermocouple data and confirmed by volumetric calculations. Each of the CSSFs is provided with instrumentation for monitoring or detecting the vault sump level, the bin vacuum or pressure, the wall temperatures of each bin, and radioactive airborne particulate in the effluent vault air.

A detailed discussion of CSSF 1 can be found in SAR-104. Detailed discussion of CSSFs 2, 3, 4, and 5 can be found in PSD Section 8.3. Upgraded SAR-105[3] has been submitted to DOE-ID for review and approval. Approval of SAR-105 (CSSFs 2, 3, 4, and 5) is pending. The safety basis for the CSSF 6 is contained in INTEC SAR-106. A preliminary safety analysis report (PSAR) exists for CSSF 7, but a safety basis for operation of CSSF 7 has not been developed.

2.2.2.1 CSSF 1 (CPP-741). The DOE-approved safety basis of CSSF 1 is contained in INTEC SAR-104. This upgraded safety analysis meets the requirements of 10 CFR 830. TSRs derived from the upgraded safety analysis have also been approved by DOE. Therefore, the scope of this BIO no longer includes CSSF 1.

2.2.2.2 CSSFs 2 and 3 (CPP-742, and CPP-746). CSSFs 2-3 are located south of the NWCF (CPP-659). The CSSFs 2 and 3 vault structures are founded on bedrock and house seven vertical cylindrical bins: six are arranged in a circle and the seventh bin is located in the center of the circle created by the other six bins. CSSFs 2 and 3 are partially belowgrade and are further surrounded by an earthen berm for radiation shielding.

CSSFs 2 and 3 are filled with calcined solids to operating capacity and contain approximately 856 m^3 (30,200 ft^3), and 1,092 m^3 (38,500 ft^3), respectively. Originally, the calcined solids were transported pneumatically from the WCF calciner to CSSFs 2 and 3. The cyclone located above the bins separated the solids from the transport air, allowing the solids to drop into the bins. During the filling process, the transport air was returned to the WCF for discharge with the other process off-gases to the Atmospheric Protection System (APS). The transport air lines from the WCF to CSSFs 2 and 3 were cut and capped during WCF D&D. Heat generated by radioactive decay was originally removed by natural convective cooling air. CSSF 2 does not have an exhaust damper; however, closure of the inlet damper terminates all significant airflow through the vault. The CSSF 3 inlet and outlet dampers are closed, terminating all significant airflow through the vault. In addition, heat is conducted through the vault concrete walls, and dissipates to the surrounding soil. Continuous air monitors (CAMs) are used to detect radioactive airborne particulate in the isolated CSSFs 2 and 3. The CSSFs 2 and 3 bins are vented through the APS where the effluent is filtered and monitored prior to being discharged to the environment via the INTEC Main Stack.

2.2.2.3 CSSF 4 (CPP-760). CSSF 4 is located southeast of the NWCF (CPP-659). The CSSF 4 vault structure is founded on bedrock and houses three vertical cylindrical bins. CSSF 4 is partially belowgrade.

CSSF 4 is filled to operating capacity, containing approximately 488 m^3 (17,200 ft^3) of calcined solids. Originally, the calcined solids were transported pneumatically from the NWCF calciner to CSSF 4. The cyclone located above the bins separated the solids from the transport air, allowing the solids to drop into the bins. During the filling process, the transport air was returned to the NWCF for discharge with the other process off-gases to the APS. The valves in the transport air line from the NWCF to CSSF 4 are locked closed. This configuration prevents reverse flow of material to the NWCF. Heat generated by radioactive decay is removed by the natural convective cooling air flow in CSSF 4. In addition, heat is conducted through the vault concrete walls, and dissipates to the surrounding soil. CAMs are used to detect radioactive airborne particulate in the cooling air exhaust of CSSF 4. If radioactive airborne particulate is detected in CSSF 4 by the facility CAM, the cooling air inlet damper automatically closes to prevent any significant radioactive airborne particulate release from the facility. The CSSF 4 bins are vented through two HEPA filters in series that vent to the cooling air stack on the CSSF 4 roof.

2.2.2.4 CSSF 5 (CPP-765). CSSF 5 is located northeast of the NWCF. The CSSF 5 vault structure is founded on bedrock and houses seven vertical annular bins. Six of the bins are arranged in a circle, with the remaining bin located in the center of the circle of six bins. CSSF 5 is partially belowgrade.

CSSF 5 is filled to operating capacity, containing approximately 992 m^3 (35,000 ft^3) of calcined solids. Originally, the calcined solids were transported pneumatically from the NWCF calciner to CSSF 5. The cyclone located above the bins separated the solids from the transport air, allowing the solids to drop into the bins. During the filling process, the transport air was returned to the NWCF for discharge with the other process off-gases to the APS. The valves in the transport air line from the NWCF to CSSF 5 are locked closed. This configuration prevents reverse flow of material to the NWCF off-gas system. Heat generated by radioactive decay was originally removed by natural convective cooling air in CSSF 5. All vault cooling air dampers have been secured closed within the facility, terminating all significant cooling air flow through the CSSF 5 vault. In addition, heat is conducted through the vault concrete walls, and dissipates to the surrounding soil. CAMs are used to detect radioactive airborne particulate in CSSF 5. The CSSF 5 bins are vented through two HEPA filters in series that exhaust to the isolated cooling air stack on the CSSF 5 roof.

2.2.2.5 CSSF 6 (CPP-791). The DOE-approved safety basis of CSSF 6 is contained in INTEC SAR-106.[4] This upgraded safety analysis meets the requirements of 10 CFR 830. TSRs derived from the upgraded safety analysis have also been approved by DOE. Therefore, the scope of this BIO no longer includes CSSF 6.

2.2.2.6 CSSF 7 (CPP-795). The scope of this BIO does not include CSSF 7. Prior to CSSF 7 operation, a DOE-approved safety basis that complies with DOE Order 5480.22 and 10 CFR 830 will be required.

2.2.3 Liquid Waste Management Facilities

The liquid waste management facilities at INTEC are: (1) the Service Waste (SW) facilities, (2) the Liquid Effluent Treatment and Disposal Facility (LET&D), (3) the Process Equipment Waste (PEW) facilities, and (4) the Tank Farm (TF) facilities. The SW and LET&D systems support INTEC nuclear facility operations. These facilities are classified as “Less than Hazard Category 3” and their safety analyses are not required to meet 10 CFR 830. Therefore, the SW and LET&D facilities are not within the scope of this BIO. Descriptions of the PEW and TF facilities are provided in the following sections. More detailed discussions of the PEW, TF, LET&D, and SW facilities can be found in their respective PSDs (Sections 4.2 and 8.6A)[5] or auditable safety analysis (ASAs) (Section 4.3).[6]

Ventilation systems associated with the liquid waste management facilities are discussed in Section 2.2.4. These discussions are deferred because the ventilation systems are interconnected with various facilities at INTEC.

2.2.3.1 PEW Facilities. The PEW facilities constructed in 1953 receive radioactive, low fluoride liquid effluent streams from INTEC processes. The collected waste streams are concentrated in the PEW evaporators and separated into a bottoms fraction that is sent to the radioactive waste storage tanks at the TF. The overheads from the PEW evaporator contain a very low concentration of radioactive contamination. These condensed evaporator overheads are further processed in the LET&D facility. The LET&D facility separates the liquid into a steam overhead and a concentrated nitric acid bottoms solution. This bottoms solution is recycled to the NWCF or discharged to the TF. The overheads from the LET&D are low enough in radioactivity content to be released to the environment as vapor through the INTEC Main Stack (CPP-708).

Waste streams to the PEW system are collected in a common receiving tank in CPP-604. Processing building drains that may collect process releases or decontamination liquids are discharged to this system. Numerous sources in the plant contribute liquid feed to the PEW system, including (1) process condensate, (2) sink and safety shower drains from research and analytical laboratories, (3) cooling water from the product denitrator, (4) process sampler drains, (5) process equipment decontamination, (6) off-gas condensers, (7) cell floor drains, (8) fuel storage basins, and (9) water treatment. Floor and equipment drains in CPP-604 also drain to the receiving tank.

Liquid waste generated at other parts of the INEEL may be sent to INTEC for treatment, if approved by DOE. This waste is transported by tank truck to an unloading station (CPP-1619) west of the FAST Facility. A connection is made to the tank, and air pressure is applied. The waste is transferred into the waste transfer line from the CPP-603 FSB and drains by gravity to the PEW system.

From the receiving tank, liquid can be jetted or pumped to an evaporator feed tank, from which it flows by gravity through a control valve to an evaporator. The liquid can also be pumped to a second evaporator. Waste is fed to an evaporator until a predetermined specific gravity is reached or until the supply tanks are empty. After the specific gravity is reached and the feed is shut off, the evaporator bottoms are dumped to a concentrate tank. From there the waste concentrate is transferred to a 1.14×10^6-L (300,000-gal) tank in the TF or to a CPP-604 storage tank.

Each PEW evaporator in CPP-604 has an unscaled heat exchange capacity of 6,000,000 Btu/h and an operating capacity of 2,080 L/h (550 gph) of aqueous feed. The evaporators have thermosyphon design with a flash column and replaceable shell and tube heat exchanger. The flash column contains a roughing mesh for water de-entrainment above the disengaging section. A fine mesh mist eliminator is located above the flash column.

The overhead from the evaporator goes to a water-cooled shell and tube condenser; the condensate is collected into a small receiver and then routed to a hold tank. If analysis of the hold tank contents indicates radioactivity levels or organic solvents above specified limits, the condensate is recycled back to the PEW evaporator. If the activity and solvent concentrations are below specified limits, the condensate is pumped through an inline radiation monitor. The concentrate is prepared for the LET&D process by adding aluminum nitrate to complex fluoride ions in the condensate vessels to reduce corrosion in the LET&D process. Upgraded SAR-108 has been submitted to DOE-ID for review and approval. Approval of SAR-108 is pending.

2.2.3.2 Tank Farm Facilities. SAR-107 has been approved by DOE-ID and implemented by the contractor. This section will be removed on the next update of the BIO since it is outside the scope of the BIO.

2.2.4 The Atmospheric Protection System

The APS (CPP-649) provides final filtration of effluent gasses for several processes and ventilation systems. The APS has two sides. One side consists of the ventilation APS, primarily the filter cell and the building ventilation air system. The other side, process off-gas (POG) APS, is designed to filter more contaminated, moisture-laden process effluent, including those containing high amounts of NOx. Both systems are collectively referred to as the APS. The effluents passing through the APS are then discharged through the INTEC Main Stack (CPP-708).

2.2.4.1 Process Off-Gas Atmospheric Protection System. Separation of the process flow from the ventilation flow allows the special conditions, such as high moisture content for POG, to be considered in the design. The POG side of the APS treats three flows: (1) the combination of flows from a dissolution process and effluent from the Rare Gas Plant (RGP); (2) the combination of vessel off-gas (VOG) from the TF, CPP-604, the RGP, and (after pretreatment in the CPP-601 mist eliminator) the VOG from CPP-601 process vessels; and (3) the flow originating at the NWCF. These effluent flows combine before entering the POG APS.

The three flows combine into one flow downstream from a blower. This combined stream is treated through a condenser, a mist eliminator, a superheater, another superheater, and a final bank of three parallel HEPA filters. Aerosol ports have been added to the upstream VOG filter providing two testable stages of filtration for this process stream. Vacuum for the entire POG APS is provided by either of two blowers.

The collected condensate water flows from the bottom of the mist eliminator to the PEW system. The resulting PEW condensate is treated through the LET&D Facility. Superheating of the off-gas through the two superheaters minimizes aerosol formation and provides protection for the two filter banks. The final stream is exhausted through blowers to the atmosphere via the INTEC Main Stack. Primary filtration is still provided upstream, which provides for two testable HEPA stages on the process line.

At the NWCF, the POG is treated and passes through one of three blowers. These blowers provide the vacuum for the VOG and POG of the calciner and high-level waste evaporator processes and maintain the integrity of the primary barrier. For a complete description of the NWCF off-gas and ventilation systems, see INTEC SAR-103. Certain maintenance activities occasionally require that these blowers be removed from service. The bypass route for these activities involves venting the POG filter effluent to the valve cubicle cell at the NWCF.

All of the dissolver off-gas (DOG), VOG, and POG filters are provided with bypass routes to allow for the replacement of filters as required except for the final POG filters, which have no bypass routes. Normal operation of the POG APS requires two stages of aerosol testable filters to be in service and operable at all times, except during filter changeout and other maintenance activities that may be required. Detailed discussions can be found in PSD Section 8.6.

2.2.4.2 Ventilation Atmospheric Protection System. Ventilation air from the Fuel Processing Building (CPP-601), the RGP (CPP-604), the APS (CPP-649), the LET&D (CPP-1618), and the TF pressure relief valves comes together in a common duct and flows to the prefilter in CPP-756, which is an underground concrete vault. After the prefilter, the airflow goes to the APS in CPP-649, where it passes through a bank of 104 parallel HEPA filters. Just before the blowers, the E-Cell DOG (E-DOG) enters the stream. E-Cell is inactive and valved out at the APS.

Vessel process off-gas and DOG (excepting the E-DOG) from CPP-601, CPP-604, TF, and NWCF come together in CPP-649 and flow to CPP-604 and CPP-605. APS process and VOG system prefilters and HEPA systems in these buildings remove particulate material prior to exhausting these gases at the 8.2-m (27-ft) level through the INTEC Main Stack.

The ventilation system air (composed of ventilation air from CPP-649, CPP-604, CPP-605, CPP-601, and the pressure relief valves from the TF) is routed through a deep bed fiberglass filter at CPP-756, to the ventilation exhaust filter system in CPP-649. The ventilation air ducts from the various ventilation systems and the TF pressure relief valves join before entering the prefilter distribution plenum. The distribution plenum extends the full length of the vault and distributes air into each of four filter bays. The prefilter is designed for gas upflow at 15.2 m/min (50 ft/min) through five layers of varying density, separately supported, packed fiberglass. The screens are mounted on epoxy-painted carbon-steel frames and wired to support pipes spaced at 0.9 m (3 ft) intervals. The prefilter frame is attached to unistrut embedded in the vault walls. Voids in the unistrut are caulked and sealed to prevent bypassing of the filter media. The prefilter is located upstream in series with the APS HEPA filters.

The prefilter is located in an underground reinforced concrete vault. The vault includes a system for backwashing the filter media. A bypass duct is provided around the prefilter for use during washing of the filter media. The floor of the vault is sloped to the north. Four troughs drain condensate or flush water to the north edge of the vault. From there, another trough carries the water to a 1,890-L (500-gal) collection sump located in the northeast comer of the vault. The sump is equipped with a high level alarm, a transfer jet, and a sampler.

The south wall of the vault has six viewing ports for inspection of the vault and filters. No lights are provided in the vault. Portable lighting is used when needed. The roof of the vault is belowgrade and covered with dirt for radiation shielding. The roof and earth cover are sloped. The vault is leakproof construction. Four radiation wells allow radiation readings to be taken at differing levels in the vault interior. From this data, a radiation profile can be obtained, and total radioactive loading can be calculated.

Ventilation air from the prefilter is discharged through a concrete duct to the HEPA filters located in building CPP-649 adjacent to the prefilter vault. The two story building contains 26 caissons, each containing four filters. Each caisson is individually testable as one unit using an aerosol test. The caissons are arranged in a parallel configuration in relation to ventilation flow. Each HEPA filter is rated at 28.3 m^3/min (1,000 scfm) with an initial pressure drop of 1 in. w.c. Each of the 26 caissons is individually dampered to allow it to be isolated from the remainder during filter changeout.

From the HEPA filters, the ventilation air normally flows through two of three ventilation fans (one fan is required) and is exhausted to the stack at the 8.2 m (27 ft) level. The direct drive fans are arranged in a parallel configuration. During normal operation, two of the three fans are operated on commercial power. If an operating fan fails, the third fan can be manually started on commercial power. Automatic switching of an operating fan to standby power can be selected during commercial power outages. Each fan is provided with a damper that will close automatically to prevent recirculation if the fan stops. In the event of total fan failure, a fan control bypass switch allows for instrument air (with nitrogen backup) to open all dampers and allow for natural draft up the stack. The natural draft provides minimal ventilation. Detailed discussions can be found in PSD Section 8.6.

2.2.4.3 INTEC Main Stack (CPP–708). The INTEC Main Stack (CPP–708) is a 76.2-m-(250-ft)-tall concrete structure lined with stainless steel. The inside diameter of the stack is 2.4 m (8 ft) tapering to 2.0 m (6.5 ft) at the very top. The taper increases the exit velocity of the stack effluent.

The INTEC Main Stack is the final release point for ventilation air and POG from a variety of plant areas at INTEC. Processes and effluent streams that have contributed to the total gaseous effluent from the stack include chemical dissolution of nuclear fuels, separation of uranium from dissolved solutions by organic extraction, conversion of recovered uranium from a liquid to a solid product, calcination of liquid waste generated during the dissolution and recovery processes, gases generated from the storage of radioactive waste, and recovery of noble gases (generated from fuel dissolution) in the RGP.

Ventilation exhaust is the major contributor in terms of volume to the INTEC Main Stack, but is a minor contributor in terms of radioactive or hazardous releases. The total flow rate for ventilation air is nominally 2,970 m^3/min (105,000 scfm). The flow rate for process gases is nominally 141.6 m^3/min (5,000 scfm).

The lowest penetrations of the Main Stack at 3.2 m (11 ft) are for the POG from the LET&D facility (CPP-1618), exhaust process gases from the CPP-620 High and CPP-637 Low Bay Laboratories, and exhaust process gases from the defunct NOx Pilot Plant. A penetration is also provided to accommodate a transfer jet system for process waste liquid that might collect in the sump at the bottom of the stack liner. The 4.9-m (16-ft) stack elevation contains the penetration for ventilation air from CPP-601, CPP-604, CPP-649, CPP-1618, the TF relief valves, and E-DOG. A penetration at the 8.2-m (27-ft) level exhausts POGs from CPP-601, CPP-604, the TF, and the NWCF.

In 1979, the Main Stack (CPP-708) was upgraded with the installation of a concrete sheath. In 1984, a second concrete sheath, new foundation, and a stainless-steel liner were installed. A structural evaluation indicated that the stack would survive an earthquake with a horizontal ground acceleration of 0.12 g (3.9 ft/s^2 or 1.2 m/s^2) or a wind loading of 148 km/h (95 mph) after the upgrade. Detailed discussions can be found in PSD Section 8.6.

2.3 Laboratory/Experimental Facilities

2.3.1 Remote Analytical Laboratory (CPP-684)

Detailed descriptions of the RAL and its operations are contained in SAR-120, which has been approved by DOE and implemented by the contractor. This section will be removed on the next update of the BIO since it is outside the scope of the BIO.

2.3.2 Laboratories (CPP-602, CPP-630)

Analytical chemistry laboratories are situated in CPP-602, a three-story concrete structure including basement, constructed in 1953, and CPP-630, an adjoining two-story cinder block structure constructed in 1956, with a portion converted to a mass spectrometry laboratory in the mid 1980s. The laboratory facilities are primarily analytical chemistry and development laboratories designed for chemical and radiochemical analyses and for bench-scale process development work.

The laboratories support INTEC and other INEEL and DOE site programs. A wide variety of analytical techniques are used, including Organic Analyses, Spectrochemistry, Special Analysis and Radiochemistry in CPP-602 and Mass Spectrometry in CPP-630. Both radioactive and nonradioactive samples in a variety of matrixes are received for analysis, necessitating a large chemical reagent inventory. Administrative and engineering controls, safeguards, and procedures exist to aid in the safe operation of the work in the laboratories.

The laboratories are ventilated through several separate systems whose exhausts ultimately pass through HEPA filters before discharge to the atmosphere, thus adding to the safe operation of the laboratories. CPP-602 2nd floor laboratories and two 3rd floor laboratories (327/315) are exhausted through HEPA filter in the CPP-602 fan loft and released to the atmosphere from a stack on the roof of CPP-602. CPP-602 basement laboratories 103B, one northeast hood in rm 103A, and 109 and east hall, east side 3rd floor laboratories are exhausted through HEPA filters on the roof of CPP-630 and released to the atmosphere from a stack on the same roof. CPP-602 basement laboratories, 103A, with exception of the one northeast hood, and 121B, are exhausted through HEPA filters adjacent to or above the laboratories to the APS via the CPP-601 east vent tunnel. All of CPP-630 laboratories are exhausted through HEPA filters on the roof of CPP-630 and released to the atmosphere on the same roof.

Detailed discussions of the laboratories are provided in PSD Section 9.1C. Upgraded SAR-121[7] has been submitted to DOE-ID for review and approval. Approval of SAR-121 is still pending.

2.3.3 Experimental Facilities (CPP-620, CPP-637)

The Process Improvement Facility (CPP-637) contains offices and several small general chemistry laboratories. Work in this facility and the Chemical Engineering Lab (CPP-620) typically involves nonradioactive materials, although some projects do use small quantities of radionuclides. Experimental programs are carried out in the High Bay and Waste Management Development areas of the Chemical Engineering Lab/Annex (CPP-620) and the Low Bay area of CPP-637. The experimental facilities are used to: (1) test and evaluate new equipment and processes, (2) test and evaluate existing equipment and process modifications and improvements, and (3) provide solutions for other technical problems. Ventilation and POG systems for these experimental facilities are briefly described in Section 2.2.4. These facilities have been recategorized as moderate hazard, non-nuclear facilities.

These facilities, their operation, and past operation are described in PSD Section 9.2. Upgraded SAR-134[8] has been submitted to DOE-ID for review and approval. Approval for SAR-134 is pending.

2.4 Deactivation Facilities

INTEC currently has facilities that are in transition awaiting D&D. The sections below describe these facilities and their current condition.

2.4.1 Fuel Processing Facility (CPP-601)

Most processes that were used for fuel reprocessing are housed in one processing complex, CPP-601, adjoining and interconnected to the CPP-602, CPP-627, CPP-630, and CPP-640 support facilities. Only the FDP area, which is housed in the FAST building (CPP-666), is not located in the processing complex. This main processing complex is a rectangular structure about 73.2 m (240 ft) long, 30.5 m (100 ft) wide, and 27.4 m (90 ft) high, from lower level to the top of the roof. In one section, the building extends 18.3 m (60 ft) below ground level. Nearly 30% of the horizontal cross sectional area in the building consists of concrete walls used for shielding and structural purposes.

Process equipment in CPP-601 is contained within 29 cells, most of which are approximately 6.1 m (20 ft) square and 8.5 m (28 ft) deep. The bottom of each cell is lined with stainless steel and most of the equipment is stainless steel, except those components made of more exotic alloys for resistance to specific chemicals.

With the exception of four sample cells provided with viewing windows and manipulators, the in-cell process equipment was controlled from an operating corridor. The corridor runs the length of the building between two rows of cells and contains graphic control panels, control and monitoring instrumentation, and pneumatic valve control stations for regulating the flow of fluids through the process. Below the operating corridor are service piping and access corridors. Sampling and ventilation corridors are located outside the row of cells. The top story of the building is an unpartitioned process makeup area that was used for reagent storage, makeup, and charging of fuel elements into the cells.

PSD Sections 5.1, 5.2, 5.7, 6, 7.1, 7.2, and 7.6 contain detailed descriptions of the CPP-601 headend dissolvers; first-, second-, and third-cycle extraction systems, and various support systems. Detailed discussions of these systems are provided in the PSD. Most of the TS/Ss are inactive and are being cancelled. Status addenda have been prepared for each PSD section.

CPP-601 has had all remaining product and waste solutions removed from its process systems. All process systems have undergone flushing to remove any residual material. CPP-601 systems are currently in surveillance and maintenance mode. Equipment used to recover uranium from dissolved fuels still remains within the various cells and is awaiting D&D. Systems remaining in CPP-601 include aluminum fuel dissolution, zirconium fuel dissolution, uranium rework and salvage, feed preparation, feed clarification, tributyl phosphate (TBP) extraction, TBP purification, hexone extraction, hexone purification, intercycle storage, aqueous uranyl nitrate storage, and various off-gas systems. The portion of the PEW system that resides in CPP-601, the deep tanks (WG-100, WG-101, WH-101 and WH-100), is still active.

Ventilation and POG systems associated with the fuel processing facility are discussed in Section 2.2.4.

2.4.2 Uranium Denitration Process and Product Storage (CPP-602)

The denitration process was used to convert liquid uranyl nitrate solution received from the hexone extraction processes to granular uranium trioxide (UO_3) in a heated fluidized bed. The granular product was packaged and stored in a vault pending shipment to other users or storage locations. The waste condensate stream, composed of water, nitric acid, and trace amounts of uranyl nitrate, was sent to the PEW evaporator. After preliminary treatment within the denitration system, off-gasses discharged to the plant vessel off-gas system (see Section 2.2.4). The denitration process has undergone system flushing and a limited amount of decontamination after the last process run. No future use has been identified and the system is awaiting D&D.

A detailed description of the CPP-602 denitration and product storage systems is contained in PSD Sections 7.3 and 7.4.

2.4.3 Rare Gas Plant (CPP-604)

The RGP, last operated in July 1988, will no longer be operated. During its last campaign, krypton (Kr) in the form of Kr-85 was recovered and sent off-site. The RGP also recovered xenon (Xe) gas. The Xe and Kr were separated from the off-gas streams, purified, and packaged in the RGP for off-site shipment.

The RGP is housed in three off-gas cells located on the west side of CPP-604. The cells are designated the north, middle, and south off-gas cells.

The RGP has undergone some flushing with water, but the flushing has not been completed. There are gas cylinders in the facility that, although they were emptied as far as possible, still contain residual amounts of krypton. Process lines have been blind flanged to isolate the facility. Detailed descriptions of the RGP are contained in PSD Section 7.5. Ventilation and POG systems associated with the RGP are discussed in Section 2.2.4.

2.4.4 Remote Analytical Facility and Multi-Curie Cell (CPP-627)

CPP-627 is a multipurpose laboratory and a small-scale process facility and is no longer used. CPP-627 is currently awaiting D&D. Several laboratories for conducting chemical research and analytical chemistry in support of various INTEC programs were located within this facility. These laboratories include the Special Analysis Laboratory (SAL), the Remote Analytical Facility (RAF), the Multi-Curie Cell (MCC), the Hot Chemistry Laboratory (HCL), the Decontamination Development Laboratory (DDL), and the Emission Spectrometry Laboratory (ESL). Until 1986, the SAL and RAF supported INTEC fuel reprocessing programs. The Remote Analytical Laboratory (RAL) replaced these laboratories. The MCC was originally used for irradiated fuel dissolution research. The MCC was then used for approximately ten years for custom fuel processing.

The custom fuel processing system included the MCC, a glovebox, and the walk-in hood. The dissolver equipment was located in the walk-in hood and the MCC. As a result of the custom dissolver accident recovery , the area was decontaminated and the equipment in the walk-in hood was removed. Currently, all of the custom fuel processing equipment has been removed from the laboratory in CPP-627, except for the glovebox and the MCC. CPP-627 is currently a buffer area. Room 105 (HCL-3) is the only area within CPP-627 that is a mass criticality control area (MCCA).

The CPP-627 area is awaiting D&D. A detailed discussion of the CPP-627 area is contained in PSD Sections 9.1C, Addendum 9.1C, and 4.10C.

2.4.5 Waste Calcining Facility (CPP- 633)

The WCF (CPP-633) is a decommissioned facility. The calcining process converted radioactive waste into a solid granular form for dry storage. The WCF converted about 1.5×10^7 L (3.9 million gal) of radioactive waste to less than 1.9×10^6 L (583,000 gal) of solid waste between 1963 and 1981. The waste processed in the WCF contained various amounts of hazardous constituents and radiological contaminants. This facility has completed D&D and is sealed with a RCRA-compliant cover. A full description of the WCF is given in ASA Section 8.1.[9]

2.4.6 Headend Processing Plant (CPP-640)

The Headend Processing Plant (CPP-640) is a five-level structure with each level containing at least one shielded process area. Five shielded process areas or cells were set aside for the fuel dissolution process. The shielded process areas include the Mechanical Handling Cave (MHC), Cells 1 through 5, and the radioactive and nonradioactive waste tank cells. Removable walls allow two or three individual cells to be combined into larger units. The following list delineates the previous application of these five shielded process cells:

- Cell 1 Equipment Handling Cell
- Cell 2 ROVER Dissolver Cell
- Cells 3-4 ROVER fuel burner
- Cell 5 Electrolytic Dissolution Cell

The MHC and Cell 3-4 have been cleaned along with all vessels except for the burner vessels VES-100 and VES-104. These vessels have been filled with grout as part of planned D&D operations to immobilize any residual fissile material contained within the vessels.

Unshielded process areas are located on two of the building levels and include the Truck Bay and the Waste Tank Control Room. CPP-640 also contains support equipment such as heating and ventilation systems and an off-gas system. All chemical makeup equipment has been removed and all chemical lines have been capped. All chemicals have been removed from this area. No future use has been identified and the systems are awaiting D&D. Ventilation and POG systems are described in Section 2.2.4.

2.4.7 Rover Fuel Processing Facilities (CPP-640)

The facilities for Rover fuel processing in CPP-640 are described in PSD Section 5.5. Rover fuel is composed of either an uncoated or a pyrolytic carbon coated graphite matrix that contains uranium dispersed throughout as uranium dicarbide fuel particles. The three basic forms are (1) cylindrical rods, (2) hexagonal rods, and (3) powders. The processing of Rover fuel was discontinued in 1984, and the Rover process has been in a shutdown mode since.

The dissolver system vessels were flushed twice with borated water: once with a heel-out of nitric acid and hydrofluoric acid, and once with water. Blind flanges were installed in the dissolver system to prevent any inadvertent transfers of reagents. In addition, the line from CPP-640 to CPP-601 that transferred Rover product to the F-cell centrifuge was cut and capped. All lines that could introduce moderator into Rover Cells 2 and 3/4, and the MHC were also cut and capped. Burner vessels VES-100 and VES-104 have been grouted.

Removal of uranium-bearing material from the Rover fuel processing facility has been completed. The safety basis for this activity is contained in an addendum to PSD Section 5.5. Future D&D activities will be covered by a separate safety analysis.

2.4.8 Electrolytic Fuel Processing (CPP-640)

The Electrolytic Dissolution Process facility is housed inside CPP-640 Cell 5. The facility used accelerated anodic corrosion to process stainless-steel-clad fuels.

The Electrolytic Dissolution Process was last operated in 1982. Campaign 37 was prematurely halted because of leaking valves and was never completed. A final uranium heel-out was performed.

The equipment underwent limited internal and external decontamination. Decontamination operations were stopped when a valve in the vent tunnel began leaking. The vent tunnel was cleaned and the valve was repaired, but decontamination operations did not resume. The charging chute in the ceiling hatch has been closed and locked. The cell still has high radiation levels. Further detailed descriptions of the facility and operation are contained in PSD Section 5.4.

2.4.9 Fluorinel Dissolution Process Area (CPP-666)

The FDP, which is located in the FAST facility (CPP-666), was last operated in 1988, after two campaigns. The process was in a maintenance turnaround status until the announcement that reprocessing would be discontinued. The FDP has been in a transition status since April 28, 1992.

All reagent makeup and feed vessels have been emptied, but not all have been flushed and may contain some residual hazardous chemicals, such as cadmium sulfate and cadmium nitrate. All three FDP dissolution trains have undergone chemical flushing followed by water rinses. Remaining solids have been sampled and determined to consist mainly of aluminum and zirconium. Sample analysis has found no hazardous constituents inside the dissolution trains and there is less than 15 g of uranium total in the three trains. All fuel transfers into the FDP cell have ceased. All valves transferring product from the FDP to CPP-601 have been closed. As a result, the FDP cell is designated as a non-CCA.

The DOG and cell off-gas (COG) prefilters and HEPA filters contain both radioactive materials and cadmium and are considered mixed waste. The FDP cell has RCRA interim status for storage of spent filters. There are 105 DOG prefilters, 40 final DOG HEPA filters, and 2 COG HEPA filters currently stored in the FDP cell. The spent HEPA filters are expected to be treated by the Filter Leach Process located in the NWCF.

A minimum number of systems remain in service indefinitely to provide adequate heating and ventilation, contamination control, fire protection, and basic utility services. Draft SAR-113, for the FSA portion of the building that contains descriptions of the HVAC, electrical system, and auxiliary systems has been submitted to DOE-ID and is awaiting approval. All other process related systems have been taken out of service. Most of the process instrumentation, the Data Processing System Enhancement, and the plant protection system have been taken out of service.

Most of the TS/Ss for the FDP have been canceled. The operating and administrative procedures have been reviewed and have either been rewritten or canceled to reflect the current configuration. Many of the remote operating procedures have been retained for use as needed. A revision to an existing status addendum is being developed to incorporate a justification for eliminating the engineered safety features (ESFs). A hazard assessment document (HAD) is being developed to determine a hazard classification/categorization for FDP, independent of the FSA portion of the facility being Hazard Category 2. This HAD determines the level of safety basis documentation that must be developed for the FDP, based on its inventory and defined operational scope. A safety basis document is currently being developed.

Detailed descriptions of the FDP configuration can be found in PSD Section 5.6, Volume II.

2.5 Hazardous, Low Level Radioactive and Mixed Waste Management Facilities

INTEC has two designated waste management facilities: the Radioactive Mixed Waste Staging Facility (CPP-1617) and the Hazardous Chemical/Radioactive Waste Facility (CPP-1619). These facilities are classified as less than Hazard Category 3 and auditable safety analyses are required. These facilities are excluded from the requirements of 10 CFR 830 and are not discussed further in this document.

2.6 Bulk Chemical Storage Facilities

INTEC has three main chemical handling and storage buildings. These buildings are the Hazardous Chemical Storage Facility (CPP-1635), the Bulk Chemical Unloading Building (CPP-1644), and the Chemical Storage Pump House (CPP-621). They are either covered by an existing safety analysis, a safety analysis is being prepared, or they are addressed by the *INEEL Occupational Safety Manual* (PRD-186, OSM).[10] These nonnuclear facilities do not have radioactive inventories and are excluded from the requirements of 10 CFR 830 and are not discussed further in this document.

2.7 References

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2. Idaho Nuclear Technology and Engineering Center, Facility-Specific Safety Analysis Report, *New Waste Calcining Facility*, SAR-103, Current revision.

3. A. C. Clark, letter to B. A. Cook, "Transmittal of DOE Order 5480.23 Upgraded SAR-105, "Calcined Solids Storage Facilities 2 through 5." Cancellation of PSD 8.3B, PSD 8.3B-A, PSD 8.3C, PSD 8.3C-A, PSD 8.3D, TS 8.2A2, TS 8.2A7, TS 8.2A8, TS 8.2B1, TS 8.2B6, TS 8.2C1 and revisions of TS 15C2 and TS 4.1E1 for Review and Approval. CCN 00-013017, September 26, 2000.

4. Idaho Nuclear Technology and Engineering Center, Facility-specific Safety Analysis, *Sixth Calcined Solids Storage Facility*, SAR-106, Current revision.

5. *Idaho Nuclear Technology and Engineering Center Plant Safety Documents*, WIN-107.

6. Idaho Nuclear Technology and Engineering Center Auditable Safety Analysis Report, *Service Waste Facilities*, ASA-4.3, INEEL/EXT-94-022.

7. A. C. Clark, letter to B. A. Cook, "Transmittal of Upgraded Safety Documents for the Laboratory Facilities (CPP-602 and CPP-630)," CCN 17718, March 22, 2001.

8. J. E. Hovinga, letter to B. A. Cook, "Approval of INTEC SAR 6.2, Experimental Facilities," JEH-060-099, July 7, 1999.

9. Idaho Nuclear Technology and Engineering Center Auditable Safety Analysis Report, *The INTEC Waste Calcining Facility*, ASA-8.1, INEEL/EXT-97-01231.

10. *INEEL Occupational Safety Manual*, PRD-186, Current issue.